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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/647,376

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Yoshikazu Miyajima

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EXAMINER

GUTIERREZ, KEVIN C

ART UNIT

PAPER NUMBER

2851

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/647,376	<b>Applicant(s)</b> MIYAJIMA, YOSHIKAZU	
	<b>Examiner</b> Kevin Gutierrez	<b>Art Unit</b> 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 32-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 32-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3-5-07</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 5, 2007 has been entered.

### *Response to Arguments*

2. Applicant's arguments with respect to newly added claims have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Objections*

3. Claims 32, 38, 41 and 44-45 are objected to because of the following informalities: It has been held that the recitation that an element is "*adapted to*" perform a function is not a positive limitation but only requires the ability to so perform. *In re Hutchinson*, 69 USPQ 138. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 32-37, 43 and 46-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Sogard (US 2005/0099611).

Regarding claim 32, “a mirror (fig. 4, 20; mirror) having a reflection surface (22; front surface) which reflects incident light ([0028], lines 3-5);

a heat-radiation member (32; pipe) arranged at a light incidence side of said mirror (see fig. 4, where the channels 30 containing pipe 32 are located near the front surface 22 where light is incident); [0004], lines 6-8), spaced away from the reflection surface (22) of said mirror (20) and arranged outside a light path of the incident light and light reflected from the reflection surface (see fig. 4, where light is incident and reflects off of front surface 22 and channel 30 is out of the light path); and

a temperature control member (34; coolant fluid) adapted to control temperature ([0029], lines 3-4) of said heat-radiation member (32).”

Regarding claim 33, Sogard discloses “further comprising another heat-radiation member arranged at a side opposite to the light incidence side (22) of said

mirror (20) and spaced away from a surface opposite to the reflection surface (22) of said mirror (see fig. 4, where a plurality of channels 30 containing a pipe 32 are arranged opposite to front surface 22 and spaced away at least by a distance of a gap 36).”

Regarding claim 34, Sogard discloses “wherein said heat-radiation member (22) includes a curved surface (see fig. 4, where pipe 32 is curved and circular) corresponding to the reflection surface (22) of said mirror (20).”

Regarding claim 35, Sogard discloses “wherein said heat-radiation member (32) comprises a plurality of radiation plates (see fig. 5B, where there are multiple pipes 32), and wherein the light path is arranged between at least two of the plurality of radiation plates (see fig. 4, where the light path impinges the front surface 22, which is located between any of the channels 30 containing the pipes 32).”

Regarding claim 36, Sogard discloses “wherein temperature of the plurality of heat-radiation plates are controlled individually ([0036], lines 21-25; [0056], lines 9-12).”

Regarding claim 37, Sogard discloses “wherein said temperature control member includes a pipe (32) connected to said heat-radiation member, and wherein temperature controlled liquid (34; coolant fluid) or gas flows inside the pipe (32).”

Regarding claim 43, Sogard discloses “wherein said temperature control member includes a pipe (32), in which temperature controlled liquid (34) or gas flows, and a solid heat-transfer element, which is arranged between said heat-radiation

member ([0038], lines 22-25, where a heat exchanger is involved) and the pipe and connected to said heat-radiation member and the pipe (32).”

Regarding claim 46, Sogard discloses the limitations set forth in claim 32 and further discloses “wherein said mirror (see fig. 1C, PR1-PR4 or IR1-IR4) is configured and positioned to guide the light to at least one of the original (M) and the substrate (W).”

Regarding claim 47, Sogard discloses the limitations set forth in claims 32 and 46 and further discloses “developing the exposed substrate (fig. 3, step 317); and processing the developed substrate to fabricate the device (fig. 3, post-processing steps).”

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sogard in view of Jurca (6,118,527). The teachings of Sogard have been discussed above.

Regarding claim 38, Sogard discloses “a mirror temperature detection unit (1220; detector) adapted to detect a temperature of said mirror (20);” and a

temperature controller for controller the temperature of the liquid or gas ([0038], lines 22-25), but does not disclose “a coolant temperature detection unit adapted to detect a temperature of liquid or gas flowing out of said heat-radiation member, wherein said temperature control member controls a temperature of liquid or gas flowing into said heat-radiation member based on information concerning the incident light to said mirror, detection result of said mirror temperature detection unit and detection result of said coolant temperature detection unit.”

However, Jurca discloses a thermometer configured to measure the temperature of a coolant (col. 4, lines 26-29). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the apparatus of Sogard by including a coolant temperature detection unit utilized in a manner described above for at least the purpose to maintain the temperature control of the mirror.

Regarding claim 39, Sogard further discloses “wherein said temperature control member controls a temperature of liquid or gas flowing into said heat-radiation member using a feedforward control ([0038], lines 22-25).”

Regarding claim 40, Sogard further discloses “wherein said mirror temperature detection unit includes a radiation thermometer (1220; detector) arranged to be spaced from said mirror (see fig. 12, where 1220 is spaced away from the mirror).”

8. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sogard in view of Goldstein (US 2003/0169520). The teachings of Sogard have been discussed above.

Regarding claim 41, Sogard discloses the claimed invention except for “further comprising a mirror temperature detection unit adapted to detect temperature of said mirror at a plurality of points, wherein temperature control member controls at least one of temperature and said heat-radiation member based on a temperature distribution on said mirror calculated from detection result of said mirror temperature detection unit.”

However, Goldstein teaches a mirror temperature detection unit (302; sensors) adapted to detect the temperature of a mirror (242) at a plurality of points, where a temperature control member controls at least a temperature based on a temperature distribution on said mirror calculated from detection result ([0016], lines 1-6 nad [0028], lines 1-4). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the apparatus of Sogard by including a temperature detection unit utilized in a manner described above for at least the purpose to provide temperature control to avoid aberrations.

9. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sogard (US 2005/0099611 - “Sogard ‘611”) in view of Sogard (US 2003/0235682 - “Sogard ‘682”). The teachings of Sogard ‘611 have been discussed above.



Regarding claim 42, Sogard '611 disclose a heat-radiation member, but does not disclose "wherein said heat-radiation member includes an opening, and wherein the light path is arranged through the opening."

However, Sogard '682 teaches a heat-radiation member (550a) with an opening and where a light path (540) is arranged through opening where the beam is allowed to incident on surface (538A). Further, Sogard '611 suggests that it maybe preferable to form channels proximally to the mirror surface (see Abstract, lines 10-13). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the apparatus of Sogard '611 by including a heat-radiation member with an opening arranged in a manner described above for at least the purpose to prevent mirror bowing.

10. Claims 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sogard in view of Taniguchi (US 2001/0048514). The teachings of Sogard have been discussed above.

Regarding claim 44, Sogard discloses "a mirror support member adapted to support said mirror ([0073], lines 3-5, where a vacuum chamber supports a mirror);

a heat-radiation member support member adapted to support said heat-radiation member ([0041]n, lines 4-6, where the pipes are supported by rigid framework)."

Sogard does not disclose "a mirror barrel to which said mirror support member and said heat-radiation member are fixed."

However, Taniguchi teaches a mirror barrel to which said mirror support member and said heat-radiation member are fixed ([0057], lines 3-6 where a lens group are supported in a mirror barrel). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the apparatus of Sogard by including a mirror barrel with a radiation support member fixed to the mirror barrel utilized in a manner described above for at least the purpose to reduce vibrations throughout the optical system.

Regarding claim 45, Sogard as modified discloses the claimed limitations set forth in claim 44 and further discloses “a base to which said heat-radiation member is fixed, wherein said mirror barrel and said base are separated from each other ([0041], lines 3-7, where the channels containing the heat-radiation member are connected and isolated separately to a rigid framework (base).”

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 8:00 a.m. - 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Gutierrez  
Examiner  
Art Unit 2851

May 23, 2007

Rodney Fuller  
Primary Examiner

A handwritten signature in black ink, appearing to read 'R. Fuller', with a stylized flourish at the end.